EPS 101-501 Fall 2015 – Physical Geology: How the Earth Works

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Office hours: Tuesdays 9:00-11:00am, and Tuesdays and Thursdays 3:00-4:00pm, or by appointment
STEM Center hours: Mondays and Wednesdays 1:30-3:30pm
Classroom: This class will meet Monday and Wednesday each week from 9:00-10:15am in **room C103**
Textbook: How Does Earth Work? 2nd Edition (2010), G.A. Smith and A. Pun; Publisher: Prentice Hall
Supplies: Notebook/File-folder of lined paper; pens and/or pencils.
Optional materials: Colored pens/pencils; calculator; ruler; eraser

Schedule

Week	Date		Lecture Topic	Textbook Reading	Quiz
1	Aug. 17		Course Intro; The Scientific Method part 1: observing	1.1-1.4	#01
	Aug. 19		The Scientific Method part 2: hypotheses and testing	1.3; 3.1-3.4	#02
2	Aug. 24	The Rock Cycle	Magma & Igneous Rocks	4.1-4.3	#03
	Aug. 26		Volcanoes & Igneous Landforms	4.4-4.9	#04
3	Aug. 31		Sediment formation, transportation and deposition	5.1-5.3	#05
	Sep. 2		Sedimentary Rocks; Interpreting Past Environments	5.4-5.6	#06
4	**Sep. 7**		**NO CLASS – Labor Day**	**Catch Up!**	-
	Sep. 9		Metamorphic Processes and Rocks	6.1-6.5; 6.8-6.10	#07
5	**Sep. 14**		***** TEST 1 *** Covers everything so far**	**Review your notes!**	-
	Sep. 16		Geologic Time I – Relative Age	7.1-7.5	#08
6	Sep. 21		Geologic Time II – Absolute Age	7.6-7.9	#09
	Sep. 23		Interior of the Earth	8.1-8.4	#10
7	Sep. 28		Earth's Magnetism	8.4; 9.1; 10.1-10.3	#11
	Sep. 30		Rock Deformation	11.1-11.5	#12
8	Oct. 5		Plate Tectonics I	12.1-12.5	#13
	Oct. 7		Plate Tectonics II	12.6-12.9	#14
9	**Oct. 12**		***** TEST 2 *** Covers everything since Test 1**	**Review your notes!**	-
	Oct. 14	Geomorphology	Tectonics and Surface Relief	13.1-13.3	#15
10	Oct. 19		Fluvial Processes and Landforms	16.1-16.5; 16.7	#16
	Oct. 21		Groundwater I: Basics	17.1-17.4	#17
11	Oct. 26		Groundwater II: Karst and Caves	17.5	#18
	Oct. 28		Glacial Processes and Landforms	18.1-18.3; 18.7-18.9	#19
12	Nov. 2		Coastal Processes and Landforms	19.1-19.5	#20
	Nov. 4		Deserts and their Landforms	20.1-20.5	#21
13	**Nov. 9**		***** TEST 3 *** Covers everything since Test 2**	**Review your notes!**	-
	Nov. 11		Geologic Hazards: Earthquakes	11.6-11.8	#22
14	Nov. 16		Geologic Hazards: Recurrence and Risk	16.1; 16.9-16.10	#23
	Nov. 18		Mineral Resources	2.5-2.7	#24
15	Nov. 23		Fossil Fuel Resources		#25
	Nov. 25		Fossil Fuel Resources – In-class activity		-
16	Nov. 30		***Student Presentations* -** U.S. Geological Disasters		-
	Dec. 2		Course Review Session & Exam Strategies	Look over your notes	-
17	**Dec. 7**		**NO CLASS**		-
	Dec. 9		***** FINAL EXAM 9:00-11:00am *****	**Review whole course**	-

Note: We will likely have 6-8 graded in-class activities during the semester. Make sure you attend class as much as possible!

Reading:

Suggested reading from the course textbook is given in the above syllabus. Reading is best done *before* each class. This will allow you to bring questions to lectures and ultimately provide you with a better understanding of the course material. In addition, each of the 25 online quizzes will be based on book content as well as lecture content, so to get good scores on the quizzes I suggest you read the book.

Course Goals:

1) *To introduce the principles and process of science using the study of earth science as an aide*

It behooves us to learn how to use the scientific method in our everyday thinking, and to learn how scientists use this method to assign levels of confidence to their findings.

2) *To present Earth system processes and products and the methods by which they are studied*

The Earth system consists of interactions between, in the broadest sense, the solid earth, water, the atmosphere and living organisms, where each interaction yields a product that forms part of a cycle. In addition we will investigate how we know what we know about Earth's surface and sub-surface environments and processes; how well we understand these; and what we are able to observe and measure. This will be accomplished through a series of videos, demonstrations and hands-on activities.

3) *To give each student a better appreciation of the world around them, and how it affects their lives and the lives of others*

If nothing else I hope that you come away from this course with a closer connection to your home – the Earth: have a better understanding of the hazards to human life and property due to earth processes; know how rocks are formed, how they are different, and how this gives them properties that make them useful for different human activities; and how earth processes have acted slowly, or quickly, to construct the landscape around us.

Student Learning Objectives (SLOs):

1. By evaluating a set of data, the student will define a problem, pose a hypothesis, and describe how the hypothesis can be tested.
   (Relates to UNM/HED Area 3, Competencies 1, 2, 4)

2. Students will be able to state the age of the Earth and describe how geologists measure absolute rock ages by radioactive decay.
   (Relates to UNM/HED Area 3, Competencies 1, 3)

3. Students will be able to determine the relative order in which a series of geologic events occurred by applying the concepts of relative dating.
   (Relates to UNM/HED Area 3, Competencies 1, 3)

4. Students will be able to describe the compositional (crust, mantle, core) and mechanical (lithosphere, asthenosphere, outer core, inner core) layers that exist in the Earth.
   (Relates to UNM/HED Area 3, Competency 3)

5. Students will be able to name and describe fluvial, karst, glacial, coastal and Aeolian landforms (e.g. meanders, moraines, dunes, etc.) and be able to explain the specific geologic processes involved in their formation.
   (Relates to UNM/HED Area 3, Competencies 3, 5)

6. Students will be able to describe the three main rock types (igneous, sedimentary, and metamorphic) and how they form in the context of the rock cycle.
   (Relates to UNM/HED Area 3, Competency 3)

7. Students will be able to explain the evidence for the plate tectonic processes that occur at each of the three types of plate boundaries.
   (Relates to UNM/HED Area 3, Competencies 2, 3)

8. Students will be able to describe the geologic processes involved in formation and concentration of a significant geologic resource (examples include fossil fuels and metals).
   (Relates to UNM/HED Area 3, Competencies 3, 5)

9. Students will describe the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
   (Relates to UNM/HED Area 3, Competencies 3, 5)

Attendance & Drop Policy:

Data I have gathered shows that "good attendance" is *necessary* for successful completion of the class. This is because I cover material not in the book and because I conduct a lot of in-class assignments. Therefore I strongly encourage you to be present. If you miss **2** or more classes during the **first two weeks** of the semester, without good reason, you will be dropped from the class. Beyond that, poor attendance and lack of class participation are grounds for you being dropped.

Grading:

Your final grade will be calculated from scores on 3 tests, short in-class and homework assignments, online quizzes given to you throughout the semester, and a final exam:

Mid-term Tests: 3 tests each worth 20 percent	60 %
Minus your lowest mid-term test score	-20 %
Assignments (In-Class & Homework)	17.5 %
Online Quizzes: 25 quizzes worth 0.5 percent each	12.5 %
Final Exam	30 %
Total available points	100 %

Grades & Scores: A+ (>96%), A (92-95.9%), A- 88-91.9%), B+ (85-87.9%), B (82-84.9%), B- (78-81.9%), C+ (75-77.9%), C (72-74.9%), C- (68-71.9%), D+ (65-67.9%), D (62-64.9%), D- (60-61.9%) and F (0-59.9%)

Note that you need a C grade (72%) or better to get science credit for this class.

Online Quizzes:

You will be assigned 25 short, web-quizzes (posted on Blackboard Learn) during the semester. Each is worth 0.5% of your final grade. Quiz questions will be based on material done in class and the required reading. Quizzes will be posted to Blackboard Learn after the class they are assigned (see topic schedule on page 1 for days when quizzes will be assigned), and the deadline for completing each quiz will be immediately before the start of the next class (8:59am).

In-Class & Homework Assignments:

A total of 17.5% of your grade in this class will be based on short in-class assignments, some of which may need to be completed outside of class time (i.e. as homework), and regular homeworks. These assignments will not all be worth the same percentage of your final grade. The value of each will be stated when they are assigned. **Homeworks are due in class.**

Late Assignments:

- Turned in same day as due, but after class: will be docked 25% of the achieved grade
- Turned in any time after due date: will be docked 50% of the achieved grade

If you did not achieve 100% on a homework assignment you may resubmit it for up to 50% of the remaining credit. You may resubmit homeworks as many times as you wish even if they were turned in late the first time.

Tests/Final Exam:

TESTS – cover material, including homeworks and assigned readings, from the date of the previous test up through the class immediately before the test. Each test is worth 20% of your grade, with the exception that I will drop the lowest of your three test scores when calculating your final grade.

FINAL EXAM – covers all of the material presented in class and through assignments during the entire semester. However, approximately 50% of the material on this test will be based on the lectures presented since Test #3. The Final Exam is worth 30% of your final grade.

All of the tests and the final exam contain short- and long-answer questions, interpretation of diagrams and some multiple-choice questions. You may bring one 8.5 x 11 inch page of notes to each test/exam. Anything that you can fit on the page is ok. Bear in mind however that you will mostly be tested on your understanding of concepts and how to apply them rather than your ability to memorize facts.

Lectures and Note-Taking:

It is my policy to post all lecture materials (e.g. PowerPoint slides, assignments) to the EPS101 Blackboard learn site *before* class. This is done for several reasons. First, by posting all lecture material online you can review it at any time (such as before tests and when you are taking quizzes). Second, you can bring a laptop or tablet to class and follow along electronically and be able to type notes. Third, you have the ability to print out the lecture slides and bring them to class. Many students have found that doing this helps them take better notes in class. Fourth, you can begin assignments before I hand them out in class giving you extra time to complete them.

↳**NOTE:** If you choose to print out the lecture slides, particularly if using a printing facility on campus, please consider the environment first (and the financial cost too). Print double-sided, and print multiple slides (e.g. 3-8) per side of paper (this is an option in the Print menu – ask me to show you if you need). You may also be able to identify redundant slides that do not require printing (e.g. the title slide is often not worth printing, as are slides that contain animations or video links).

Office Hours:

Please **do not be afraid** to come and talk to me about issues relating to this class. That is what my office hours (see top of page 1) are for. I can help you with: accessing the online (Blackboard Learn) portion of the course; interpreting the many geologic terms that you may read in the book or hear in lecture; troubling homework assignments; and many other things. I will also be available via e-mail and phone (see top of first page) to answer your questions.

Plagiarism/Cheating:

I encourage you to talk with one another about assignments before, and while, you do them, but all submitted work must be your own. In addition if you copy information from textbooks, newspapers, the internet or other media sources you must cite them as your source of information. Blatant copying (plagiarism) will result in a score of zero for all students involved. A second offense will result in you receiving an F for this course. I would like to draw your attention to:

The University of New Mexico's policy on "Dishonesty in Academic Matters":

"Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, including dismissal, against any student who is found responsible for academic dishonesty.

Academic responsibility includes, but is not limited to, dishonesty in quizzes, tests or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; and misrepresenting academic or professional qualifications within or outside the University".

Access:

If you have a documented learning disability, please provide a copy of your letter from **Equal Access Services** as soon as possible to ensure that your accommodations are provided for in a timely manner.

Electronic Devices:

To the benefit of you, your classmates and the learning environment **please turn off** electronic devices such as cell phones before class begins. If you wish to use a **laptop or tablet** for note-taking **please press mute** to eliminate distracting noises. Your cooperation in these matters is appreciated by all.